

# Mesenchymal Stem Cell Products

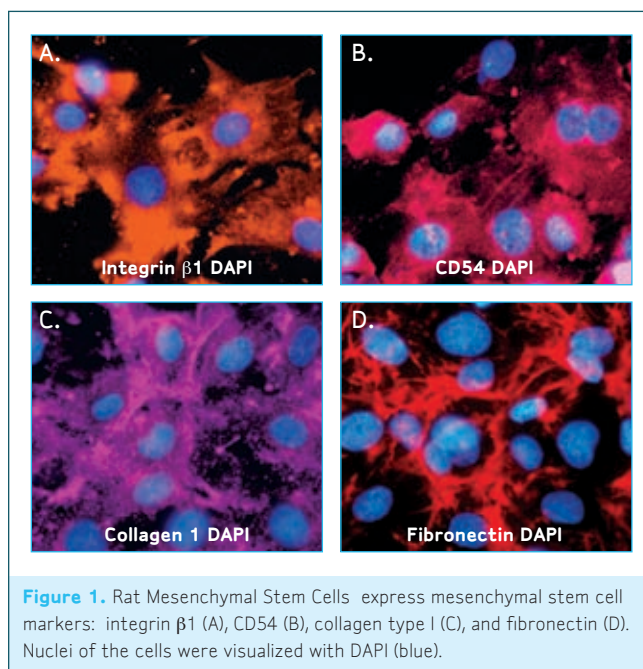
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ESGRO® Mesenchymal stem cells, also known as marrow stromal cells<sup>1</sup>, are defined as a self-renewing population of adherent, bone-marrow-derived multipotent progenitor cells with the capacity to differentiate into several mesenchymal cell lineages. In defined *in vitro* assays, mesenchymal stem cells have been shown to readily differentiate into lineage-specific cells that form bone, cartilage, fat, tendon and muscle tissues<sup>1,2</sup>. Mesenchymal stem cells also provide support and maintenance for the other major stem cell population in the bone marrow, the hematopoietic stem cells<sup>2</sup>.

Mesenchymal stem cells have historically been isolated based on the ability of these cells to form adherent cell layers in culture and the concomitant lack of adherence of other cells in the bone marrow stroma such as hematopoietic stem cells, adipocytes and macrophages<sup>1,3</sup>. While this procedure results in enriched populations of mesenchymal stem cells, the resulting bone marrow derived cell populations are nonetheless, heterogeneous – comprised not only of mesenchymal stem cells, but also of committed lineage-restricted progenitors<sup>1,3</sup>.

We have developed stem cell reagents that aid in the accurate identification and characterization of the stem cell population and that allow for the preferential differentiation of mesenchymal stem cells into adipocytes and osteocytes.

The Rat Mesenchymal Stem Cell Kit provides ready-to-use primary mesenchymal stem cells isolated from the bone marrow of adult Fisher 344 rats along with a panel of positive and negative selection markers for characterization of the



mesenchymal stem cell population (Figure 1). Positive cell markers include antibodies directed against integrin b1 (Figure 1A) and CD54 (Figure 1B), two cell-surface molecules that are present on mesenchymal stem cells<sup>2,4</sup>. Negative cell markers include antibodies directed against two specific hematopoietic cell surface markers that are not expressed by mesenchymal stem cells: CD14, present on leukocytes and CD45, present on monocytes and macrophages<sup>2,3,4</sup>. Mouse and rabbit immunoglobulins for assessment of background staining are

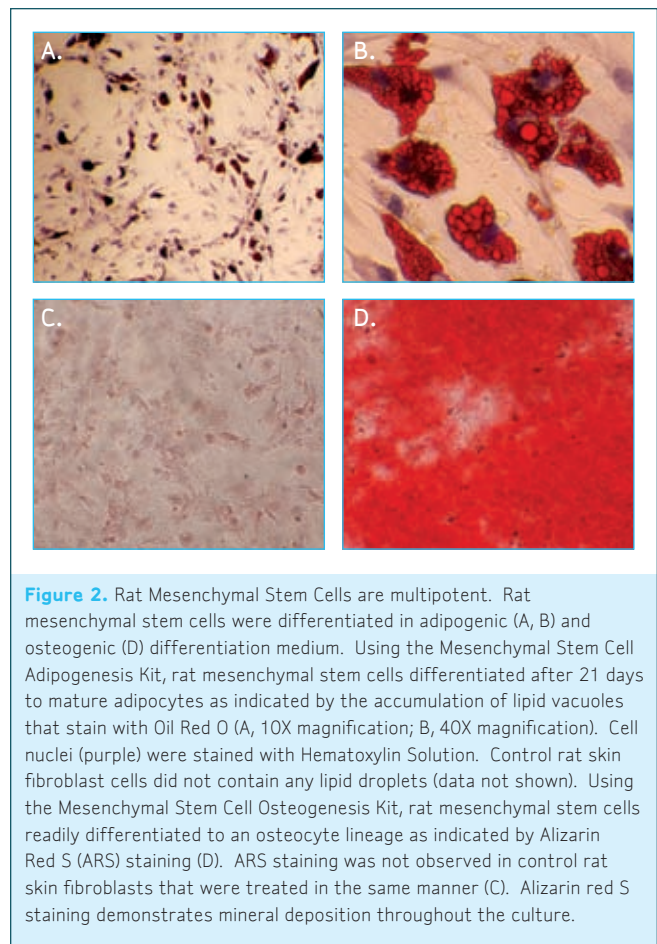
also included. Researchers can purchase the cryopreserved Rat Mesenchymal Stem Cells alone or in combination with the Mesenchymal Stem Cell Kit. All of the antibodies provided in the Mesenchymal Stem Cell Kit (Figure 1) have been tested and optimized for use in immunocytochemistry on rat mesenchymal stem cells. We recommend that the Rat Mesenchymal Stem Cells be used in conjunction with our differentiation assays to demonstrate multipotentiality of the starting cell population (Figure 2). The differentiation assays available are the Mesenchymal Stem Cell Adipogenesis Kit (Figure 2A, B) and Mesenchymal Stem Cell Osteogenesis Kit (Figure 2C, D).

## References

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2. Pittenger, M. F. and Marshak, D. R. in *Stem Cell Biology* (Eds Marshak, D. R., Gardner, R. L., & Gottlieb, D.) (Cold Spring Harbor Laboratory Press, Cold Spring Harbor, New York, 2001).
3. Alhadlaq, A. and Mao, J. J. (2004). *Stem Cells and Development* **13**: 436-448.
4. Pittenger, M. F., Mackay, A. M., Beck, S. C., Jaiswal, R. K., Douglas, R. (1999). *Science* **284**: 143-147.
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Description	Quantity	Catalogue No.
Rat Mesenchymal Stem Cell Kit	1 Kit*	SCRO26
Cryopreserved Rat Mesenchymal Stem Cells	1 Vial*	SCRO27
Mesenchymal Stem Cell Characterization Kit	1 Kit	SCRO18
Mesenchymal Stem Cell Adipogenesis Kit	1 Kit	SCRO20
Mesenchymal Stem Cell Osteogenesis Kit	1 Kit	SCRO2
LT2 Human Immortalized Pancreatic Mesenchymal Cell Line	5 x 10 <sup>5</sup> cells	SCRO13
VIT1 Human Primary Pancreatic Mesenchymal Cell Line	5 x 10 <sup>5</sup> cells	SCRO14

\*We guarantee > 1 million viable cells upon thawing





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